38th ARGOS O/C , NOAA

Agenda Item: E-1-1

Prepared by: M. Fitzmaurice
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NOAA Future Polar Missions

EXECUTIVE SUMMARY

The future of the NOAA Polar-orbiting Operational Environmental Satellite (POES) program's support of the Argos community currently consists of the successful launch and activation of the NOAA N and N' satellites. While the NOAA N satellite (planned launch February 2005) will provide coverage for the Argos community from a 2 pm, afternoon orbit, the MetOp satellites will provide coverage from the 930 am, morning orbit (planned launch December 2005). The MetOp satellites are being provided as part of an Initial Joint Polar System (IJPS) agreement between NOAA and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT). Under the IJPS, each group (NOAA and EUMETSAT) will operate their respective satellites and ground segments while exchanging and sharing the data collected by all satellites. This data sharing agreement will greatly benefit the Argos community by eliminating the current 'blind orbit' data recovery delay. After the launch of the first MetOp satellite, the National Polar-orbiting Operational Environmental Satellite System (NPOESS) is scheduled to begin deployment in 2010. NPOESS is designed to meet the operational satellite needs of both the civilian and national security communities and plans to provide data coverage from the 530 and 1330 orbit planes. The NOAA Integrated Program Office (IPO) develops, manages, procures and acquires the NPOESS satellites.

Note: On September 6, 2003, an unfortunate handling accident occurred during the integration and testing of the NOAA N' satellite. As a result of the accident, the satellite was completely disassembled and a re-build decision has not been made. NOAA N' would be the first NOAA provided satellite with the Advanced Data Collection System (A-DCS) instrument.

ACTION REQUIRED

No specific action is required.

1. INTRODUCTION

Since 1960, polar-orbiting satellites have collected environmental data from space in support of preparing informed weather forecasts. The Polar-orbiting Operational Environmental Satellite (POES) system has evolved over the years and since 1978, has operated with a two-satellite constellation in circular, near-polar, sun-synchronous orbits. The POES program is managed by the National Environmental Satellite, Data, and Information Service (NESDIS), under the National Oceanic and Atmospheric Administration (NOAA) of the United States Department of Commerce.

In the 1980s, NOAA recognized a future need to balance the high cost of space systems and the growing need to provide a complete and accurate measurement of the atmosphere at regular intervals as inputs to numerical weather prediction and climate monitoring support systems. This led NOAA to enter into agreements at the international level with the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT). The goal of this international cooperation is to provide continuity of observations from polar orbits and improve forecast and monitoring capabilities through the introduction of new technologies and cost sharing.

During the 1990s, budgetary concerns guided program decision makers to study the possible convergence of the POES mission with the United States military's Defense Meteorological Satellite Program (DMSP). The result of these studies resulted in the formation of the Integrated Program Office (IPO), a joint NOAA/USAF managed satellite program whose goal is to implement new architectures for national and international polar satellite systems. Until the new operational satellite systems are available, the current POES program will provide satellite coverage to support Data Collection System (DCS) community user needs.

2. FUTURE PROGRAM PLANS

2.1 Follow-on Satellites

NOAA's polar satellite program plan is to replace current satellites as they reach the end of their operational life. The NOAA N satellite is currently on the schedule at Vandenberg Air Force Base (VAFB) for launch on Febraury 11, 2005 to operationally replace NOAA-16 in a 2 pm, afternoon orbit. The NOAA N Data Collection System (DCS) instrument has been retrofitted with oscillation suppression circuitry (as was the SARP) to eliminate high current transients that appeared at instrument turn-on, during integration and testing at LMSS's Sunnyvale facility.

The NOAA N' satellite, which was to be the last in the current series of POES satellites (planned launch date was March 2008), but, had an unfortunate handling accident during the I&T phase at Lockheed and its future is undetermined at this time. *Note: A decision whether to rebuild has not been made as of June 16, 2004.* The NOAA N' satellite was to be the first NOAA satellite to carry the Argos Advanced Data Collection System (A-DCS). The A-DCS instrument had the added feature of a special "downlink messaging" capability which provided the ability to increase the data recovery from in-situ platforms.

2.2 EUMETSAT

As an improvement on the current POES program, an agreement between NOAA and EUMETSAT, the Initial Joint Polar-orbiting Operational Satellite System (IJPS) is being implemented. This agreement will include independent, but fully coordinated, NOAA and EUMETSAT satellites, the exchange of instruments and global data, and plans for real-time direct broadcast. The first Metop satellite is currently planned for launch in December 2005.

With the unfortunate failure of ADEOS-2, MetOp is the next planned mission with the new A-DCS instrument. As mentioned earlier, the new A-DCS instruments will have the new downlink messaging capability. This feature will allow the data rates of in-situ platforms to be increased/decreased on an "as needed" basis during special environmental events. Another positive note is that the A-DCS instrument on the MetOp satellite will have a higher data throughput capacity as a byproduct of the newer satellite's higher speed data handling system.

2.3 Next Generation Program

An Integrated Program Office (IPO) has been established to develop, acquire, and implement the NPOESS. The IPO has awarded both spacecraft and instrument contracts for a scheduled launch date of April 30, 2009. NOAA and DoD will continue to acquire and deploy the current series of POES and DMSP satellites, as required, to provide continuous satellite coverage until the first NPOESS satellite are declared operational. The planned launch of the first NPOESS satellite, designated C1, is December of 2009 into an mid-AM orbit. The second satellite, C2, is slated for launching into an afternoon or PM orbit in spring of 2011.

3. SUMMARY

Plans and programs are currently in place to provide polar satellite coverage into the 2020 timeframe. In the near term, the successful launch of NOAA N in 2005, the successful launch and activation of the MetOp satellites, and the development, implementation, and activation of the NPOESS program are key milestones. Extensive international collaboration will be required to ensure the viability and successful functionality of the future polar orbiting environmental satellite system.